Comparative Phytochemical Analysis of Medicinal Plants Namely *Tribulus Terrestris, Ocimum Sanctum, Ocimum Gratissimum, Plumbago Zeylanica*

M. S. Gincy, K. Mohan, S. Indu

Abstract
Plants are playing vital role in medicine and clinical research. They are available in plenty in nature. It is important that the plants phytochemical analysis should be done. To know the clinical components present in it. Then the economic importance species should be marked and prevented from the destruction. Phytochemical analysis tells us how important the plants are in research. With this intuition, in this study *Tribulus terrestris, Ocimum sanctum, Ocimum gratissimum, Plumbago zeylanica*, are selected. The quantitative analysis was not done but the qualitative analysis is studied and compared.

Keywords: *Tribulus terrestris, Ocimum sanctum, Ocimum gratissimum, Plumbago zeylanica*, Phytochemical analysis.

1. Introduction
Plants are the one of the most important sources of medicines. Plants have been the basis of many traditional medicine systems throughout the world for thousands of years and continue to provide mankind with new remedies. These plants find application in pharmaceutical, cosmetic, agricultural and food industry. Among the plants of medicinal value plant genus like *Tribulus terrestris, Ocimum sanctum, Ocimum gratissimum*, *Plumbago zeylanica* were selected. *Tribulus terrestris* is found to be growing in subtropical areas around the world. It is a flowering plant of the Zygophyllaceae family, native to warm temperature and tropical region of the old world in Southern Europe, Southern Asia, Africa and Northern Australia (Mukal Sharma et al 2013). Steroidal saponin and diosgenin can be isolated from this plant which is very rich in protein and calcium. *Tribulus terrestris* has antimicrobial, antihypertension, diuretic, anti acetylchololine and hemolytic activity. It has been used in Asia and Europe for years to treat libido and infertility problems (Iqbal Hussain et al 2011). The name *Plumbago zeylanica* is derived from “Plumbum” meaning lead. *Plumpago zeylanica* comes under the family of Plumbaginaceae. It is used traditionally to treat warts, broken bones and wounds. It has been used as a remedy for skin diseases, infections and intestinal worm’s viz. leprosy, scabies, ringworm, hookworm, dermatitis, acne, sores and ulcers (Manu Pant, 2012). The plants of genus *Ocimum* belonging to family Labiatae are very important for their therapeutic potentials. *Ocimum sanctum L.* (*Tulsi*), *Ocimum gratissimum* (*Ram Tulsi*), *Ocimum canum* (*Dulal Tulsi*), *Ocimum basilicum* (*Ban Tulsi*), *Ocimum kilimandscharicum*, *Ocimum camphora* and *Ocimum micranthum* are examples of known important species of genus *Ocimum* which grow in different parts of the world and are known to have medicinal properties. It contain vitamin C,A and minerals like calcium, zinc and iron aswellas chlorophyll and many other phytonutrients. *Ocimum sanctum* used as a analgesic, anticaner, antidiabetic, antifertility agents. It also been used in treatment of fever, bronchitis, arthritis, convulsions (Shahedur Rahman, 2011). The present study is undertaken to study the comparative phytochemical analysis of plant genus *Tribulus terrestris, Ocimum sanctum, Ocimum gratissimum, Plumbago zeylanica*.

2. Materials and Method
2.1 Plant Material
The whole plant of *Tribulus terrestris* were collected from Chennai and Kerala. These plants washed with fresh water and dried under shade at room temperature and then kept it into hot air oven at 30-35 °C for 24 hr.
After drying cut into a small pieces and powered into a mixer grinder and store in to a sterile containers for further use. Then this powered sample (100 g/100 ml) in ethanol and ethyl acetate for overnight at room temperature. Soxhlet apparatus are used for this extraction from consecutive soaking are pooled and evaporated under pressure. It can be used for the further analysis.

2.2 Phytochemical Analysis
The extracted sample were stirred with diluted HCl and filtered. The filtrate was used for compound analysis. The analysis was done for tannins, phlobatannin, steroids, saponins, terpenoids, flavanoids, carbohydrates, betacyanins, quinine were analysed.

a) Test for Tannins
0.5g of the dried powdered sample was boiled in 2ml of water in a test tube and then filtered. Few drops of 0.1% ferric chloride were added. Then observation for brownish green or blue-black colouration.

b) Test for Phlobatannin
An aqueous extract of the plant sample was boiled with 1% aqueous hydrochloric acid and deposition of a red precipitate was taken as evidence for the presence of phlobatannins.

c) Test for Steroids
2ml of acetic anhydride was added to 0.5 g ethanol extract of each sample with 2ml H$_2$SO$_4$. Colour changed from violet to blue or green in some sample indicating the presence of steroids.

d) Test for Saponins
2 g of the powered sample was boiled in 20ml of distilled water in a water bath and filtered. 10ml of the filtrate was mixed with 5ml of distilled water and shaken vigorously for a stable persistent forth. This was mixed with 3 drops of olive oil and shaken vigorously then observed for the formation of emulsions.

e) Test for Terpenoids
5ml of each extract was mixed in 2ml of chloroform and con. H$_2$SO$_4$ was carefully added to form a layer. A reddish brown colouration of the interface was formed to show positive result for the presence of terpenoids.

f) Test for Flavanoids
5ml of dilute ammonia solution were added to a portion of the aqueous filtrate of each plant extract followed by addition of con. H$_2$SO$_4$. Yellow colouration was observed in each extract indicated the presence of flavanoid. Yellow colouration disappeared on standing.

g) Test for Carbohydrates
1ml of molisch reagent was added to 2ml of the plant extract. A purple or reddish color indicated the presence of carbohydrates.

h) Test for Betacyanins
2 ml of plant extracts was added to 1ml of 2N NaOH and it was heated at 100 °C for 5 mins. The presence of yellow color indicated the presence of betacyanins.

i) Test for Quinine
1ml of con. H$_2$SO$_4$ was added to 1ml of plant extracts. The presence of red color indicate the presence of quinine.

3. Results and Discussions
The results of qualitative analysis of phytochemicals present in the ethanol extracts of Tribulus Terrestris, Ocimum Sanctum, Ocimum Gratissimum, Plumbago Zeylanica were presented in Table 1.

Table 1: Phytochemical analysis of medicinal plants.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Phytochemical compounds</th>
<th>Medicinal plants</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Ocimum Gratissimum</td>
</tr>
<tr>
<td>1</td>
<td>Tannins</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Phlobatannin</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Steroids</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>Saponins</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td>Terpenoids</td>
<td>+</td>
</tr>
<tr>
<td>6</td>
<td>Flavanoids</td>
<td>+</td>
</tr>
<tr>
<td>7</td>
<td>Carbohydrate</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Betacyanin</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Quinine</td>
<td>-</td>
</tr>
</tbody>
</table>

The phytochemical compound tannins present in Tribulus terrestris and Plumbago zeylanica. Phlobatannin were found only in Plumbago zeylanica. Steroids were present in both Ocimum species. Saponins and flavanoids are present in all plant extract. Except tribulus terrestris contain the phytochemical terpenoids. Carbohydrates were found in Ocimum sanctum and Plumbago zeylanica. Betacyanin and quinine were present in Ocimum sanctum and Plumbago zeylanica.

Previous studies reported the presence of saponins, flavanoids, glycosides and tannins in Tribulus terrestris. Saponin composition and content of Tribulus terrestris from different geographic region is different Saurabh chhatre (2014). Gupta 2011 stated the plant leaves of Ocimum gratissimum revealed the presence of alkaloids, tannins, flavonoids and terpenoids in the methanolic and ethanolic extracts. The presence of these phytochemicals could support the herbal medicine uses of Ocimum gratissimum as antioxidant and its edible leaves being used to prepare soup and tea. The antioxidant effect is mainly due to the presence of phenolic components such as flavonoids and phenolic acids (Abdullahi Mann, 2012). Dhale 2011 support the phytochemicals present in the Plumbago zeylanica. Firas.A, Hassan.F 2008 stated that flavonoids are phenolic structures containing one carboxyl group since they are known to be synthesized by plants in response to microbial infection. Their activity is probably due to their ability to complex with extra cellular and soluble proteins and to complex with bacterial cell wall through this destruction of bacteria will occur. It is not surprising that there are differences in the antimicrobiral effects of different solvent extracts due to phytochemical properties and differences among species (C.Baskaran, 2011).

4. References
2. C Baskaran, Sivamani P, V Ratha bai, 2011- evaluation of


